

INSECTS OF MICRONESIA

Opiliones

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INTRODUCTION

This report covers material from the Mariana and Caroline Islands. No material is at hand from the Bonin, Volcano, Marshall, or Gilbert Islands.

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ZOOGEOGRAPHY

The opilionids are poorly represented on oceanic islands such as those of Micronesia. Here they are found only on the larger islands where there is sufficient vegetation to provide cover and moisture for them.

From the material at hand, it appears that only a single family has become established in Micronesia. This is the family Phalangodidae, which is world wide in its distribution. Five genera, only one of which may be endemic, are found in Micronesia. Members of four of these genera are also found in New Guinea, the Philippines, and in some of the islands of the East Indies. From their relationships, it appears that the Micronesian fauna derives chiefly from New Guinea and the Philippines. Each genus is represented by but a single species except for one additional questionable form. All of these species are

1. *Dibunus marianae* Goodnight and Goodnight, n. sp. (fig. 1, a, b).

Male: Cephalothorax smooth. No common eye tubercle present, but with a slight elevation between and in front of eyes. Dorsal surface of abdomen with four areas, the first sometimes divided by a transverse line. In these specimens, first area may superficially look like two areas. Entire dorsum smooth except for a row of very fine tubercles along lateral margin. Free tergites smooth. Anal operculum and sternites smooth. Coxae smooth except for some small toothlike tubercles on ventral surface of first coxa and lateral margins of the third. Spiracle partially hidden. Maxillary lobe of second coxa without a ventral projection.

Legs smooth. Tarsal segments: 8 or 9-20-7-8. Distitarsus of first tarsus with two segments; second tarsus also with two segments. Third and fourth tarsi without scopulae and with smooth double claws.

Length of Legs

	I	II	III	IV
Trochanter	0.5 mm.	0.5 mm.	0.7 mm.	0.7 mm.
Femur	2.5	4.9	3.7	5.1
Patella	0.7	0.9	1.1	0.4
Tibia	2.1	3.4	2.3	2.9
Metatarsus	3.4	6.1	4.3	6.4
Tarsus	1.4	3.0	1.8	2.3
Total	10.6 mm.	18.8 mm.	13.9 mm.	17.8 mm.

Palpus: trochanter, 0.7 mm. long; femur, 1.4; patella, 1.1; tibia, 1.0; and tarsus, 0.8. Total length, 5 mm. Palpus armed retrolaterally as in figure 1, a, with three spines on tarsus. Prolaterally, femur has an apical median spine, patella has two spines, tibia and tarsus each has three.

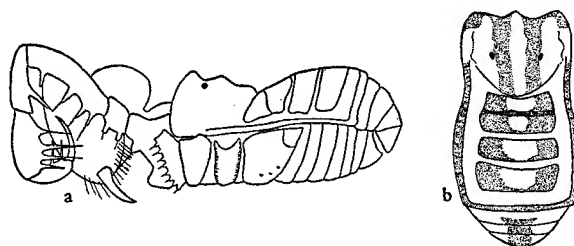


FIGURE 1.—*Dibunus marianae*, holotype, male; a, lateral view; b, dorsal view.

Chelicera has distal segment very much enlarged. Distal and proximal segments smooth except for a few tubercles on prolateral margin of distal segment. Claws large.

Entire animal light yellow brown, dorsum with darker brown markings in median and lateral portions as shown in figure 1, b. Darker brown mottlings present on appendages. These are most abundant on patellae of legs.

Total length of body of male, 3.6 mm.; cephalothorax, 1.3 mm.; width of body at widest portion, 2.4 mm.

Female: Similar in appearance to male, but without the enlarged chelicerae. Total length of body, 3.3 mm.; cephalothorax, 1.3 mm.; width of body at widest portion, 2.4 mm.

Holotype, male (US), one mile southeast of Asan, Guam, Marianas, alt. 200 meters, Nov. 5, 1947, H. S. Dybas; allotype, female, same data (US); paratypes, same data, Oct. 31, 1947 and Nov. 5, 1947, Dybas (BISHOP, CM, AMNH).

DISTRIBUTION: Mariana Is. (Guam).

This species is related to *Dibunus bakeri* (Roewer) from the Philippines; it differs by having two rather than three segments in the distitarsus of the second tarsus.

Genus *Lomanius* Roewer

Podoctis (part) Loman, 1905, Mus. Hamburg, Mitt. 22 : 33 [type: *Lomanius tridens* (Loman); Java].

Erecanana (part) Roewer, 1912, Archiv Naturgesch. A, 78 (3) : 214.

Lomanius Roewer, 1923, Die Weberknechte der Erde, 187.

Paralomanius Goodnight and Goodnight, 1948, Am. Mus. Nov., 1371 : 9.—

Roewer, 1949, Senckenbergiana 30 (4/6) : 286.

Thaipea Roewer, 1949, Senckenbergiana 30 (4/6) : 284.

Maquilingius Roewer, 1949, Senckenbergiana 30 (4/6) : 284.

Eulomanius Roewer, 1949, Senckenbergiana 30 (4/6) : 286.

Phalangodids without a common eye tubercle, but with a heavy spine between eyes. Abdominal scute with five areas, the first without a median line. Tarsi of third and fourth legs without scopulae and with simple, untoothed double claws. Femur of first leg with long spines. Tarsal segments: 2-2-5-5. Distitarsi of both first and second legs with but a single segment. Metatarsi of legs not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Palpus elongate. Secondary sexual characters of male are variable; but usually, chelicerae are enlarged, spine between eyes is heavier than that of female, and palpus is very elongate.

These animals are found in Java, Formosa, Micronesia, and the Philippines.

The members of this genus are closely related to those of the genus *Erecanana* which is found in East Africa, Reunion, and Madagascar.

2. *Lomanius longipalpus* (Goodnight and Goodnight). (Figure 2, a-c.)

Paralomanius longipalpus Goodnight and Goodnight, 1948, Am. Mus. Nov.

1371 : 9-11 (Palau Is., type in Chicago Natural History Museum).—

Roewer, 1949, Senckenbergiana 30 (4/6) : 286-287.

Paralomanius brevipalpus Goodnight and Goodnight, Am. Mus. Nov. 1371 : 11-13.

Eulomanius brevipalpus, Roewer, 1949, Senckenbergiana 30 (4/6) : 286.

Male: Cephalothorax with three spines at anterior lateral margin. Eyes not on a common eye tubercle; each eye with several small spines above it and one anterior spine which extends forward and downward to touch cephalothorax. Posterior to each eye on cephalothorax are three prominent spines; these are arranged in a row with the last the largest. This row of three spines slants on either side, forming a triangle. At apex of the triangle is a very large spine which slants strongly posteriorad. Area formed

and calcaea. Maxillary lobe of second coxae without ventral projections. Palpus very elongate and slender. Secondary sexual characters of male consist usually of the longer palpus and the heavier spine between eyes.

These animals are known from New Guinea, Borneo, Celebes, and Sumbawa. Micronesia represents a new record for the genus. Most of the known species are found in New Guinea.

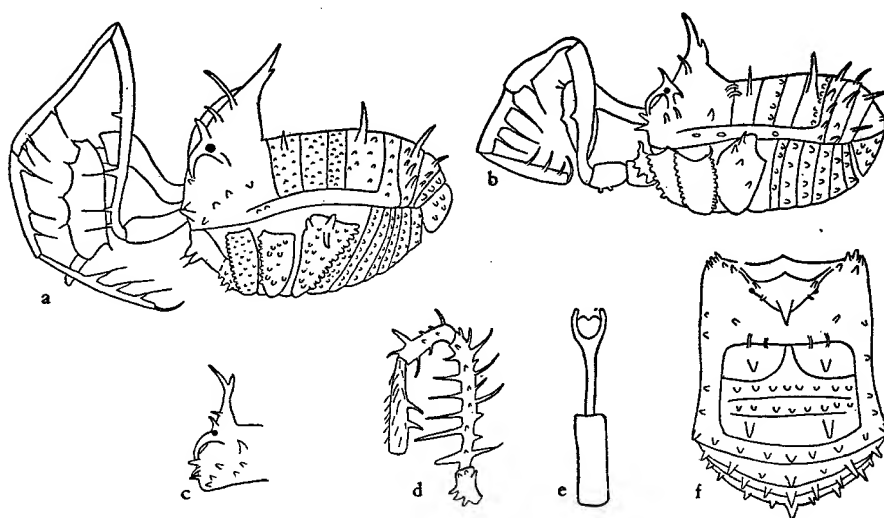


FIGURE 3.—*Metibalonius esakii*; a, lateral view of male; b, lateral view of female; c, lateral view of eye and median spine of female, showing variations found; d, lateral view of trochanter, femur, patella, and tibia of first leg of male; e, penis of male; f, dorsal view of male.

3. *Metibalonius esakii* Suzuki (fig. 3, a-f).

Metibalonius esakii Suzuki, 1941, Annot. Zool. Japon. 20 (2) : 100-103, figs. 9-16 (Ponape Island, type in Zoological Institute of Hiroshima).

Male: cephalothorax granulate; anterior margin with several prominent spines at anterior lateral border. A few other smaller spines along lateral margin. Eyes not on a common tubercle; between eyes is an enormous elevation which is tipped by a large spine. Three or four prominent spines are present on either side of this elevation. Usually there is a spine on each side at base which curves downward to touch surface of the cephalothorax. Dorsal portion of abdominal scute tuberculate, with five distinct areas. First area with a median line. Large paired median spines on first and fourth areas; second, third and fifth areas each with a transverse row of large tubercles. Each free tergite with a transverse row of large spines. Anal operculum tuberculate. Each free sternite with a transverse row of small tubercles. Spiracle concealed. Surface of coxae thickly covered with hair-tipped tubercles. A transverse row of teeth on anterior margin of second and third coxae.

Trochanter of first leg with four or five large spines; femur of first leg with an anterior and posterior row of large spines. Patella with four or five large spines irregularly scattered. Tibia with an anterior and posterior row of smaller spines and numerous tubercles. Remainder of leg clothed only with hairs. Second, third, and fourth legs

clothed throughout with hairs. Trochanters and bases of femora armed with a few spines; remainder of legs with only scattered small tubercles and an occasional small spine on patella. Tarsal segments: 3-2-5-5. Distitarsus of first tarsus with two segments; second with one. Double claws of third and fourth tarsi simple; third and fourth tarsi with scopulae. In an occasional specimen, scopulae are not well developed.

Length of Legs

	I	II	III	IV
Trochanter	0.4 mm.	0.5 mm.	0.4 mm.	0.5 mm.
Femur	1.8	6.3	4.0	5.5
Patella	0.7	1.1	0.7	0.9
Tibia	1.2	5.7	3.0	4.1
Metatarsus	2.2	4.6	4.5	5.7
Tarsus	0.7	1.3	0.5	0.5
Total	7.0 mm.	19.5 mm.	13.1 mm.	17.2 mm.

Palpus: trochanter, 0.7 mm. long; femur, 2.4; patella, 2; tibia, 1.3; and tarsus, 1.4. Total length, 7.8 mm. Trochanter with small tubercles. Retrolateral surface of femur with four hair-tipped tubercles, two at base and two in median portion; prolaterally, there is a single hair-tipped tubercle, no median apical tubercle present. Long, slender patella is curved and has a single hair-tipped spine at apical portion of retrolateral surface. Prolaterally, there are two hair-tipped tubercles at apical portion. Tibia with three hair-tipped spines on either side, tarsus with three on either side. In a series of specimens which were measured, femur varied in length from 1.3 to 2.4 mm.

Chelicerae enlarged; proximal segments tuberculate, curved, with distinct swellings at apical portions. Distal segments also enlarged, with a few anterior spines. Claws prominent.

Entire animal dark reddish brown, with some lighter mottling on appendages.

Total length of body of male, 2.9 mm.; cephalothorax, 1.2 mm.; width of body at widest portion, 2.1 mm.

Female: Similar in appearance to male, but with much shorter palpi (femur varies in length from 1 to 1.3 mm.) and a less massive spine between eyes. Total length of body, 2.5 mm.; cephalothorax, 0.9 mm.; width of body at widest portion, 2 mm.

DISTRIBUTION: Eastern Caroline Is.

PONAPE. Numerous specimens (US, BISHOP, CM, AMNH): Mt. Dolen Kiepw, June-Sept. 1950, P. A. Adams; Mt. Pairot, 300-600 m., Mar. 1948, Dybas and June-Sept. 1950, Adams; Mt. Kupwuriso, 300-600 m., Mar. 1948, Dybas; Mt. Temwetemwensekir, 150-450 m., Feb., Mar. 1948, Dybas and June-Sept. 1950, Adams; Mt. Nahnalaud, 150-600 m., Mar. 1948, Dybas; Nanipil, Feb. 1948, Dybas; Dolen Eireke, Sept. 1950, Adams.

Genus *Parasamoa*, new genus

Opilionids with a common eye tubercle which is bluntly rounded above; eye tubercle armed only with tubercles above. Abdominal scute with five dorsal areas, first without a median line. Tarsi of third and fourth legs with heavy scopulae and with simple untoothed double claws. Femur of first leg not elongate or heavily spined. Tarsus of first leg with three segments. Distitarsus of first tarsus with two segments; second, with three. Metatarsi of legs not divided into astragali or calcanei. Maxillary lobe of second coxa without a ventral projection. Palpus not unusually elongate.

5. *Zalmoxis solitaria* (Roewer). (Figure 5, a, b.)

Parazalmoxida solitaria Roewer, 1916, Archiv Naturgesch. A, 82 (2): 94 (Jaluit Island, Marshalls, type in Roewer's collection); 1923, Die Weberknechte der Erde, 96-97.—Suzuki, 1941, Annot. Zool. Japon. 20 (2): 98-100.

Euzalmoxis ponapea Roewer, 1949, Senckenbergiana 30 (1/3): 24.

Male: Cephalothorax smooth except for a few irregular granules. Eye tubercle low, unarmed dorsally except for scattered tuberculations, distinctly removed from anterior margin of cephalothorax. Abdominal scute with five distinct areas, a row of low hair-tipped tubercles across each area and along lateral margin of scute. Free tergites smooth except for a few irregular granules. Anal operculum, free sternites, and coxae smooth, a few tuberculations present on anterior margin of first coxa and distal portion of fourth. Spiracles partially hidden by fourth coxa. Maxillary lobe of second coxa without ventral projection, with only a small, rounded anterior tubercle.

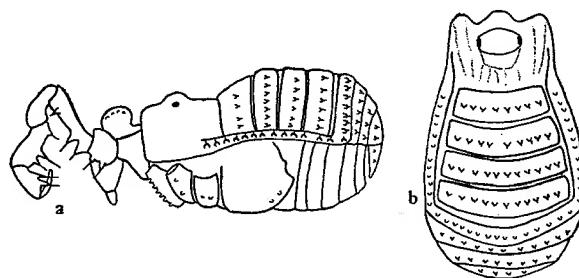


FIGURE 5.—*Zalmoxis solitaria*; a, lateral view of male; b, dorsal view of male.

Trochanters of legs globular, a few small granulations on third and fourth legs. In some specimens small spines are present on fourth leg; and trochanter, femur, and tibia are slightly enlarged. Remaining segments of legs smooth except for numerous hairs. In one male, metatarsus of third leg was greatly enlarged. Tarsal segments: 3-7-5-5 or 6. Distitarsus of first tarsus with two segments, second, with three. Tarsal claws smooth, without scopulae.

Length of Legs

	I	II	III	IV
Trochanter	0.3 mm.	0.4 mm.	0.4 mm.	0.5 mm.
Femur	1.0	1.8	1.4	2.0
Patella	0.5	0.7	0.5	0.8
Tibia	0.7	1.5	1.0	1.5
Metatarsus	1.2	1.7	1.6	2.2
Tarsus	0.8	1.5	1.0	1.3
Total	4.5 mm.	7.6 mm.	5.9 mm.	8.3 mm.

Palpus: trochanter 0.4 mm. long; femur, 0.7; patella, 0.4; tibia, 0.6; and tarsus, 0.5. Total length, 2.6 mm. Palpus armed retrolaterally as in figure 5, a. Prolaterally, femur with an apical median spine, patella with a median spine, tibia and tarsus, each with three. Chelicera slightly enlarged, smooth. Entire animal dark reddish brown.

Total length of body of male, 2.9 mm.; cephalothorax, 1.2 mm. Width of body at widest portion, 1.9 mm.

Female: Similar in appearance to male, but with the chelicerae slightly smaller in size. Total length of body, 3 mm.; cephalothorax, 0.9 mm.; width of body at widest portion, 1.9 mm.

DISTRIBUTION: Marshall Is. and eastern Caroline Is.

PONAPE. Numerous specimens (US, BISHOP, CM, AMNH): Mt. Nahnalaud, Mar. 1948, Dybas; Mt. Kupwuriso, Mar. 1948, Dybas; Mt. Temwetemwensekir, Mar. 1948, Dybas.

Zalmoxis solitaria was originally described from Jaluit Island in the Marshalls. Unfortunately no specimens were available from these islands for our study, but the specimen from Ponape agreed so closely with the description that there is little doubt that they belong to the species. Suzuki (1941) agrees with this conclusion. Roewer (1949) describes an animal from Ponape as *Euzalmoxis ponapea*. As his specimen had paired tubercles over the eye and a very large first area, he considered it different from *Z. solitaria*. Our specimens from Ponape do not show this difference. The eye tubercles are covered with small tubercles, which in some specimens may appear paired. Also our specimens did not have unusually wide first areas. For these reasons, we believe the specimens from Ponape should be considered as *Z. solitaria*. Roewer (1923) also records *Z. austera* Hirst from Ponape, but this is undoubtedly a misidentified specimen of *Z. solitaria*.

6. *Zalmoxis marchei* Roewer.

Zalmoxis marchei Roewer, 1912, Archiv Naturgesch. A, 78 (3): 129; 1923, Die Weberknechte der Erde, 88.

Another species described from Micronesia is *Z. marchei* Roewer from the Marianas. While it is impossible to be sure of the identity of this animal from the material at hand, it appears possible that this is another form of *Z. solitaria*. At present, however, it appears best to consider it a different species.

